Space Weather Forecast

Issued on Tuesday, 15 November 2022 at 00:44 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of Moderate flares (Minor to Moderate radio blackouts) throughout. Slight chance of S1 (Minor) Radiation Storms and Strong flares (Strong radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low, but background X-ray flux is now up to Common-class levels with numerous mid-upper Common-class flares, mainly from the largest region on the disc in the northwest. This large, complex region has shown continued strengthening of its intermediate spots through the day, with increasing magnetic complexity. The region poses the most significant risk for further flares at this time. The other large region to the south of the most active region has continued to slowly decay and appears simpler and smaller than at the start of the UTC day on the 14 Nov. The remaining two regions, one in the northwest and the other in the northeast appear small and simple at present.

No significant Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of waning coronal hole fast wind influences. Wind speeds were slightly elevated, varying, but on a declining trend between 420-480km/s. Total magnetic field strength has been weak throughout, with the important north-south component fluctuating weakly. Geomagnetic activity was Quiet (Kp 0-2) throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Moderate, with a chance of isolated M-class flares during the period. There is a slight chance of isolated X-Class flares. The most likely source of flare activity is from the largest, most complex sunspot group in the far northwest.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are likely to give significant impacts at Earth. Some minor CME effects are possible through this period, however any potential impacts would be expected to be weak. A very weak and slow CME may give very minor impacts on 18 or 19 Nov.

Solar winds are currently at slightly elevated levels due to waning coronal hole influences. Winds are expected to continue to slowly decline through much of Day 1 (15 Nov). There are two small coronal holes which may give some enhancement later on Day 1 or from early on Day 2 (16 Nov). They may prolong the period of slightly elevated wind speeds into Day 3 or 4 (17 or 18 Nov), though confidence is low due to differences from the previous rotation. Geomagnetic activity is expected to be predominantly Quiet to Unsettled through the period. There is a chance of isolated Active intervals if we encounter any effects associated with the two coronal holes later on Day 1 or early Day 2, or if we see any weak CME related enhancements into the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

protons) is most likely to persist at background levels. However, there is a slight chance of an increase in solar radiation over normal conditions from the two largest sunspot regions in the far northwest.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.